

## Abstracts

### Advances in Cancer Research:

#### An Indo-German Dialogue for Innovation

September 19th, 2017, at Taj Palace Hotel, New Delhi – 110021, INDIA

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#### **Innovative and Disruptive Technology in cancer**

**Presenting Author: Dr Sunil K Khetarpal, COO & MS, Rajiv Gandhi Cancer Institute & Research Centre, Delhi, India.**

Globally there has been an explosion of Cancer diseases as well as its remedies. Today, treatment of cancer is synonymous with research.

Early detection is critical in cancer control and prevention. New diagnosis technologies like Biomarkers and fluid biopsy are playing important role in early and accurate diagnosis of cancer.

Genetic and environmental factors lead to the different types of cancers. New therapies like next generation targeted therapies and immunotherapy have shown promising results in treatment of metastatic cancers. While the former combine drugs with different targets to treat cancer, Immunotherapy put emphasis on making the patient's immune system sensitive to cancer cells again and letting the immune system fight back.

Surgeons using surgical robots such as Da Vinci are capable of performing operations with previously unachievable precision. Robot as an extension of the surgeon's mind and skills help operating tumors in early stages, or tumors in close proximity to sensitive organs .

Only disruptive innovations will be able to transform the status quo in cancer making it a manageable chronic condition with more personalized and faster care, while letting physicians do their job more effectively.

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#### **Recent Molecular Diagnostic tools supporting personalised medicine in cancer therapy**

**Presenting Author: Dr Ravi Gaur, COO & Lab Director, Oncquest Laboratories Ltd, New Delhi, India.**

The practice of medicine has now entered an era in which the individual patient's genome will help determine the optimal approach to care. However, the drug industry is still struggling to cure cancer despite pouring enormous resources. Some drugs do show benefit, but more often

to a very small subset. In the case of many so called targeted drugs there is also now a 'companion diagnostic', which more often assist in excluding patients from treatment. If the trend goes on, soon new technology will reveal more and more mutations and other genetic changes. Furthermore, this is a dynamic situation; changes are occurring all the time. Many of these will exclude patients from new drugs. May be time to invest into early detection by imaging and improved surgical techniques. The technology is available, with NGS and mass-spec leading the way. We need to look at the some of the current technologies for the discovery and delivery of molecular diagnostic, prognostic and predictive tests and speculate on where this area is heading with regard to advanced technologies and likely future requirements.

Genomics, which has quickly emerged as the central basic science of biomedical research, is poised to take center stage in clinical medicine as well. Clinical guidelines will continue to have an important role in clinical care and will need to put the advances in genomic medicine into a balanced health-system specific context.

Molecular diagnostics involves the measurement of DNA, RNA, proteins or metabolites to test for specific states of health or to see if disease exists. Molecular diagnostics, essentially the analysis of DNA and RNA at the molecular level, is a fast-growing business, made possible by the growing understanding of the human genome, which has driven growth in the diagnostics industry.

Our growing understanding of cancer cell biology has lead to better ways of diagnosing and treating this disease. As we become better able to determine which genes are amplified, which are deleted, and which are mutated in the cells of any given tumor, we can begin to tailor treatments more accurately to each individual patient

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## **Molecular precision medicine to combat cancer: Prostate cancer**

**Presenting Author: Tobias Maurer M.D., Vice chair, Department of Urology**

**Technical University of Munich (TUM), Klinikum rechts der Isar, Munich, Germany**

Standard imaging procedures in cancer often fail to correctly identify the true extent of the disease and therefore limit the efficacy of treatments. Thus, there is great interest on novel imaging technologies that not only rely on morphology, but rather use cancer-specific targets for precise assessment.

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In prostate cancer, this search has led to the development of small-molecular tracers that target the prostate-specific membrane antigen (PSMA). PSMA exhibits considerable and almost exclusive overexpression on most prostate cancer cells and thus represent an ideal molecular target. Currently, functional positron emission tomography (PET) imaging using these tracers has proven superior for detection and staging of prostate cancer compared to standard computed tomography (CT), magnetic resonance imaging (MRI) or bone scintigraphy. Thus, it holds great promise to improve prostate cancer management as it enables implementation of tailored radiationtherapeutic or surgical interventions. Furthermore, the specificity of PSMA for prostate cancer led to the development of molecular precision surgery (PSMA-radioguided surgery) and PSMA-endoradiotherapy in prostate cancer patients.

Although, as in prostate cancer, knowledge is still limited it can be expected that targeted molecular precision medicine approaches might become standard of care in the future.

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## **Challenges to cancer detection: painless option of liquid biopsy**

**Presenting Author: Prof. Harriet Wikman, Institute of Tumor Biology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany**

The study of circulating tumor cells (CTCs) and circulating tumor-free DNA (ctDNA), known as liquid biopsy, has received increasing attention over the past years due to their many potential clinical applications in the individual management of cancer patients. In the metastatic setting, when no operation is any more beneficial, if biopsies are taken, they are usually obtained from single sites. These biopsies are not always sufficient to recapitulate the vast intra-tumoral heterogeneity, and therefore some druggable alterations might be missed. CTCs and ctDNA are released from all sites, thus mirroring the heterogeneity of the different tumor cells.

In numerous studies both the number/level and of both CTCs and ctDNA are associated with a worse prognosis. Furthermore, the possibility of repeated blood sampling allows disease monitoring in real time. Indeed, the enumeration of especially of CTCs has shown to recapitulate the tumor response during treatment and that the elimination or decrease of CTCs following treatment is associated with improved clinical outcomes. It has also been shown that CTCs can show novel targetable alterations, such as HER2 overexpression, not seen in the primary tumor. ctDNA analyses again have shown great power in detecting early the occurrence of the emergence of resistant clones in patients receiving targeted therapies.

Both CTC and ctDNA analyses thus represent two highly interesting complementary assays with a great clinical potential.

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## **Knowledge Mining for Clinical Decision Making and Research in Oncology**

**Presenting Author: Mathias Goeschl, Vice President Digital Content, Molecular Health GmbH, Heidelberg, Germany**

The dynamic increase in the availability of personalized genomic information, the regulatory and research initiatives to capture patient outcome and the world's published scientific knowledge exhibit a unique opportunity to create actionable knowledge for clinical research and practice. In Oncology, a lack of comprehensive clinico-molecular information may impair diagnostics and adequate treatment decision and thus may lead to prolonged treatment cycles or ultimate failure in treatment response. Besides the grave implications for the individual, treatment non-response has a huge impact on health economics and society. Expanding the setup of a clinical infrastructure towards precision medicine bears the unique opportunity to equally respond to the aforesaid needs of the clinicians and to fuel clinical research and regulation with invaluable data for future innovation. The presentation will outline Molecular Health's *Dataome* integration platform and review IT applications, such as: i) Evidence-based treatment decision support in Oncology, ii) the analysis of real-world clinical outcomes data by the application of advanced data mining techniques.

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## **Prognostication , Molecular Profiling, and Monitoring of Cancers**

**Presenting Author: Dr. Siddharth Srivastava, Chief Scientific Officer, Cellcys Labs, Mumbai, India**

Cancer is back to "n of one", where each patient's cancer is resolved individually. With completion of human genome project in 2003 and subsequent cancer genome projects, cancer is firmly placed under the scanner of molecular biology. Cancer is now viewed as molecular disease and hence its genesis, prognosis, treatment is now visualized at molecular (protein, DNA and RNA) level.

Various tools have been developed to analyze a patient's cancer at molecular level. Techniques such as immunohistochemistry (IHC), sequencing and various types of PCRs have been developed to identify molecular changes in a patient's cancer. Once the alteration has been detected, literature mining and various mutation databases are searched to understand it's clinical relevance. If an alteration of unknown clinical significance is detected, various computational tools are employed to identify possible driver mutations. Based on the detected pathogenic mutation(s), tools for finding appropriate clinical trials or FDA approved targeted therapy is utilized to resolve patient-care.

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## **Adoption of a disruptive digital device technology for early breast cancer screen**

**Presenting Author: Aparna Venkatesh, Global Marketing Director, POC Medical Systems 411, The Summit Business Bay, WEH Metro Station, Andheri (E), Mumbai, India**

POC Medical Systems is a multiple award winning Silicon Valley Startup Company founded by serial entrepreneur, Sanjeev Saxena with a mission to make cancer and infectious disease screening accessible and affordable to all. Realizing the drawbacks of mammography, we decided to collaborate with Lawrence Livermore National Labs to develop a breast cancer screening test based on its portable lab-in-a-box technology. The advantage of the Pandora CDx™ is its low cost, portability and accessibility to the masses in the remotest villages. In contrast to traditional lab based ELISAs and mammography, the Pandora CDx™ only requires a few drops of blood and there is no need of a highly trained technician. This method of 'distributed but connected point-of-care' screening and diagnostics will bring a paradigm shift in medical treatment in the world. The breast cancer screening test is the first application on the company's platform. The Pandora CDx™ This platform technology can screen over a 100 patients in a day and adheres to all HIPA compliance rules to store patient demographics, markers, tests and treatments in the cloud which may be analyzed to plan out new healthcare strategies, drugs, better therapies, treatment protocols to help reduce cost of the total healthcare system.

## **Breast Healthcare in India – Time for a paradigm change**

**Presenting Author : Dr. P. Raghu Ram, Director & Consultant Surgeon, KIMS-USHALAKSHMI Centre for Breast Diseases, KIMS Hospitals Hyderabad, Hyderabad, India**

1. To highlight the Pink Ribbon Campaign - India's First of its kind large scale Breast cancer awareness drive that I have championed over the past ten years in Telangana & Andhra Pradesh under the auspices of Ushalakshmi Breast Cancer Foundation, a not for profit Breast Cancer Charity established in my mother's name who 'conquered' Breast cancer.
2. To describe genesis of the 'Breast Centre' concept that I have been able to introduce in India and the role of Specialist Breast Centres in improving Breast Healthcare
3. To outline my experience in implementing South Asia's largest population based Breast Cancer Screening Programme in Telangana & Andhra Pradesh, which has now made a national impact. My role in ensuring pan India implementation of this landmark Screening programme, would also be highlighted.
4. To explain the evolution of The Association of Breast Surgeons of India (South Asia's First dedicated Breast Surgical Society), which is the voice for Breast Surgery in the Country and its role in standardising the delivery of Breast healthcare/developing Breast Surgery as a distinct Subspecialty in India.